The Aetiology, Morbid Anatomy & Therapeutics of Bronchoceles and Myxoedema.

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Bronchocele is an enlargement of the thyroid gland situated in the front of the neck below the larynx. It is not a painful complaint & seldom proves fatal. It is always, however, a disagreeable deformity and gives rise to great mental distress & anxiety. The size of the growth may occupy the space between the Chin & the Sternum it may hang down in a pendulous lump, or, as in a case of mine, it may surround the sides of the neck like a thick irregular collar, fixing the lower jaw & rising behind the ears towards the top of the head. By its size & weight it may seriously interfere with Mastication

and the circulation. By pressure it may obstruct the flow of blood in the veins of the neck causing headache and vertigo & cardiac affections & certainly it complicates heart disease. It may displace or distort the trachea in young persons & thus increase the difficulty in tracheotomy. It may cause dysphagia by pressure on the oesophagus or dyspnoea from its weight on the trachea. It aggravates all respiratory diseases & complicates the treatment of bronchitis & pneumonia and thus may hasten death. Hence the importance of this peculiar complaint. The localities in Scotland when goitre is endemic are so small & widely spread that they easily escape notice and are soon forgotten by the busy practitioner. Writers

on this subject generalize too quickly without taking sufficient time for careful & satisfactory observations, or scientific experiment. Hence in our text books we find eminent authors holding contradictory opinions on the pathology of Bronchocele. The functions of the thyroid gland are imperfectly known even to the learned physiologist. Therefore the careful study of its varied morbid conditions & of the bearings of each individual case, pathological & histological Chemical & Medical, would doubtless throw much light on this important complaint.

Myxoedema in a young person with changes in the enlarged thyroid gland & the Mental faculties much disturbed, is a subject growing in interest, as it shows the connexion between it & Sporadic goitre & Cretinism.

The Geographical Distribution of Bronchocoles is very extensive. Goitres have been found in India & in many other Asiatic countries. Livingstone, & later, Thompson have observed it & described it as existing among many tribes in Central Africa, especially among the people inhabiting the valleys among the mountains skirting the Western shores of Lake Tanganyika. In America it is also found in many districts both in the Eastern & Western States & in South America as well as in Canada. There are very few countries in Europe where it is not found to exist. It is said to reach its Maximum in the Cantons of Fribourg & Berne in Switzerland. The percentage of cases of goitre

in these cantons among the recruits rises as high as 80 or 90 even.
It prevails in Savoy, Northern Italy, the Tyrol & Styria, & is frequently associated with Cretinism along the Valley of the Rhone. It is very common at Aosta & in the valleys among the Mountains of Northern Italy.
In England, Derbyshire neck is found to be endemic along the Pennine chain. It is common also among the Cotswold hills of Gloucestershire & neighbouring counties. It is found among many villages along the Wooded Moorlands of Yorkshire and from reliable sources, it is said to prevail in 24 counties of England from the centre northwards. It is found in Scotland in several villages along the Clyde from Rutherglen up to Wishaw, in Roxburgh & also in Fife it is found especially where the potable water is procured from deep wells in the neighbourhood

of old mines. I have found it in Flotta & other small isles in Orkney. In my own particular district, the Holm hill divides the parishes of Holm & St. Andrews. The hill runs from East & West & on its Eastern & northern slopes there is a marsh or peat-bog. Further down the hill & below the marsh there is a chain of small tarns, in many of which there are to be found cases of different bronchoceles from simple glandular hypertrophy on to a case of Malignant goitre, with one case of thyroid enlargement & mental weakness. Exophthalmic goitre is also found here & a case, already referred to, of Myxoedema.

(page 3) That form of idiocy known as Cretinism is not often found in Britain or Ireland. Cases however have been met with from time to time in the South of England. It is found chiefly in the low lying damp, confined villages of the Alps,

and is associated with Bronchocele.

On ascending the mountains of the same place however goitre is found to prevail while Cretinism is left below. Cretinism is a most melancholy affection & is found in all degrees from mere obtuseness of thought & purpose to the complete obliteration of all human intelligence. All the senses are very defective as speech sight & sound. Their bodies are of stunted growth, with large heads thick features, goggle eyes, flat nose large mouth, and their coarse rough skin is much wrinkled even in youth.

Their chest is large, abdomen full crooked legs, soft flabby muscles with considerable mental weakness very little above the lower animals in their general conduct.

Bronchaceles have long been connected with certain Geological formations. A favourite theory has long been held that Magnesian Limestone is invariably connected with goitre, Yet it is now well known that goitre is rare in some districts where this formation exists as in Nottinghamshire. The presence of the Carbonate or Sulphate of Calcium is said to render water "hard" & this hard water decomposes soap, which soft water dissolves soap. A deposit of lime is also found lying at the bottom of cooking utensils when this hard water is used. This is the case in my district. I have seen it too in houses near Rutherglen & Wishaw where they used the water from deep pump wells. In the town streets of Geneva where they obtain their potable waters from pump wells bronchoceles are found very common.

Soft cliffs of Magnesian limestone are found in abundance also in many Alpine villages where goitrous persons & cretins live as at Cluses on the Arve. Also in India among goitrous villages it has been ascertained that the water from many wells, springs through transition limestone & conglomerated rock composed of calcareous tuff, which villages supplied by water flowing through clay slate do not present a single case of this complaint as in the Valley of the Baribice on the southern slopes of the Himalayan Mountains.

In our own country we find endemic goitre very common on this geological formation as along the central districts of Yorkshire & the borders of Derbyshire & Nottinghamshire On the Chalk formation it is said to prevail tolerably universally, tho' not to any large extent as at Romsey, Lymington & the neighbourhood of Bournemouth. Also on the borders

of Suffolk especially at certain localities along the valley of the Stour. In the Weald districts of Kent, Surrey & Sussex the disease is seldom found when the upper green sand & gault underlie the chalk, which along the South & Bedfordshire when the lower green sand abounds goître is found to prevail to a considerable extent. Strumpthill in this locality is a well known seat of bronchocele.

Underlying the chalk beds & towards the West we find the great Series of the oolite formations. Some writers affirm that goître is not uncommon on the oolites especially where they join the Lias formation as in Somersetshire, Gloucestershire & in Yorkshire near Helmsley. Whilst quite lately it was maintained that a single case of this disease could not be found on the oolites. Dr St. Lager however, points out that all the oolite beds in Yorkshire & Devonshire

tho geologically the same yet they differ in composition, and that in France goitre is never found on the oolites.

Again Brondsceles are found tho' to a moderate extent on the Carboniferous Rocks & Coal measures, as in Derbyshire & Yorkshire in England & Lanark, Ayr & Fife in Scotland. In Flotta in Orkney & Hoy also where there are extensive peat mosses over some limestone grit & iron pyrites. The Carboniferous limestone regions of England are described as the very hotbeds of goitre & the latest researches have given this view considerable additional weight, particularly in & around Clevedon in Somersetshire & on the slopes of the Mendip hills, which in the north of England it is less common where the calcareous character of the soil is less marked by the prevailing sandstones & shales.

Wales is said to be wonderfully free of goitre, & in fact the rocks there

are of the Saluvian, Cambrian & precambrian formation.

In districts when the Igneous Rocks prevail, as Granite, Goitre is not known to exist as at Widdicombe & Dartmoor & at Aberdeen & Peterhead.

The Water in all these districts is pure & plentiful whether got from the running stream, the hillside Spring or the deep well sunk in the Rock. It is worthy of notice that in Southern places the hardness or Softness of the water is of little account in estimating the prevalence of bronchocele. Public analysts have made very careful chemical tests & published reports of their investigations, from which it appears that in Some Southern districts only 4.75 grains of total Solids is found per gallon of water. The degree of hardness varies considerably in different localities from 6 degrees up as high as 67 degrees,

and Derbyshire neck is found to be as prevalent in the one place as in the other under these varied conditions

It is well known that drinking the water in goitrous places will produce the disease. Whole regiments of young recruits, quartered near Fribourg & Berne, when there are goitrigenous wells, have in the course of a few months or even weeks become affected with swellings in the neck & thyroid.

A new supply of water to a town from a goitrous source has brought the disease to the inhabitants & on the other hand a village getting rid of goitrous water by a new supply the people got rid of goitre, as in Rutherglen when the Loch Catherine water was brought in & the old supply from pumps & deep wells abandoned. So in Geneva & many other places in France & Switzerland

Young men who object to the much hated Military Service, drink water from certain sources & acquire goitres

& are consequently rejected by the examining Officers of the Medical Board. Many of these wells are well known to young Conscripts as at Briançon & other localities.

It is very evident from what we have said that Bronchocales are very common & endemic over a very large portion of the world & of our own Country in particular. Also that it is coexistent with certain geological formations chiefly with Magnesian Limestone & calcareous rocks & Sand stones. It is doubtful if it ever occurs on non-calcareous rocks. The Millstone grit, the Igneous rocks the Cambrian, Devonian, Silurian & Some parts of the Coal measures which are free from Calcareous & Magnesian limestone, appear to be free, on the whole, of this complaint. Chemical Analysis by experts has shown that bicarbonates & Sulphates of lime & Magnesia are the chief causes of the hardness of Goitrous Water. Some how

mentioned iron pyrites as a probable cause of bronchocele, but public analysts have shown that in Derbyshire the spring waters have been found free of iron. Goitre has never been produced on animals by feeding them with water containing sulphate or carbonate of lime. Yet, as stated above, water, hard with these ingredients, causes the complaint in many cases.

Sex is an important point to notice in the discussion of this subject. Women are much more frequently attacked than men with bronchocele. Physiologists affirm that there are more Leucocytes in the blood of females than in the blood of males naturally, and that in uterine changes at puberty & especially at conception these white blood corpuscles are increased. They allege that the thyroid gland is an important factor in the formation of new blood corpuscles. In pregnancy

there is an increased demand on blood forming organs & that the thyroid gland thus may be overworked. If goitre be endemic where the woman lives, the thyroid in her case may become hypertrophied, with diminution of the corpuscles of the blood, with debility & general anaemia. This may occur also in menstruation. On the other hand, Marks an altogether from these exciting alterations, and systemic periods. This is a favourite & generally adopted theory in regard to the Sex question in goitre & agrees with my own personal experiences in several cases.

The etiology of Bronchocele has long been shrouded by many various & mysterious theories. From a very early date it was maintained that the drinking water was the cause of the complaint. This is still a popular & prevalent idea. Glacier & snow water pour their coldness, was blamed by Hippocrates, Aristotle Galen & Celsus. Cold muddy water deficient in oxygen, iodine & carbonic acid, has all been set down as the cause. A common favourite theory is the "hardness" of the potable waters, but we have already shewn that this theory is merely hypothetical & as many 'hard' waters are well known never to cause goitre altho' they may cause diarrhoea from their hardness, while some wells with from 4 - 7 grains of solids per gallon only, are well known to

cause swellings in the neck & thyroid. Several eminent authorities after great painstaking & laborious scientific research among the wells of goitrifeous districts assert as their belief that water from certain defiled geological strata & contaminated with certain earthy salts is the real cause of bronchocoeles. And as already stated this is always the case in connexion with the Magnesian limestone formation. Dr. H. Lager in his capital work on this disease alleges that the cause of endemic goitre is a certain poison of iron, probably in combination with sulphur, as a bisulphide. After much labour & chemical analysis he affirms that goitre is found on all those formations in France containing iron pyrites, and that he has produced the disease in mice by adding iron sulphide to their food

for some months.

In Watson's "Principles & Practice of Medicine" he affirms his belief that goitre is traceable with tolerable certainty to some deleterious agent in the potable waters & looks for the solution of the problem to the chemical analyst. In Bristowe's treatise on Medicine he inclines to the theory of the impregnation of water by earthy salts as the cause of goitre. In Erichsen's Surgery he associates it with anaemia & affirms that the want of pure air & sufficient sunlight has more to do with the etiology of goitre than any water theory. In such a case it would prevail in mines among men & horses & this is found not to be the case in such circumstances.

Some blame intermarriage and consanguinity as predisposing to goitre, the strumous diathesis & heredity are said to cause it by other writers.

There are many examples to prove

that neither heat nor cold, rainfall nor rarity of atmosphere has any special share in the production of goître. Carrying loads on the head or forking the head into the sides of cows during milking of the animals is said by some to cause this complaint. This is simply hypothetical. Some allege that it is found in deep valleys where from their direction the sun does not shine; in low lying damp parts of towns & on damp soils. Others ascribe it to some miasmatic influence or to an actual micro-organism which is specially developed from decayed vegetable matter on the Calcareous & Magnesian limestone formations. There is an amount of decayed vegetable matter in the marsh in my district which I blame to a great extent in the production & continuance of the malady. But the poor people cannot emigrate or change their homes & thus suffer on with it.

Many enlargements of the thyroid are well known to begin with uterine changes, as at puberty or pregnancy. Some years ago I was called to see a young girl M. F. about the age of puberty. She was strong, well fed, & very tall about 5ft-9in. No other case of goitre was known to be in the village. Her mother & sisters never complained of goitre. She was entirely free from all the causes usually alleged to produce the disease. I found her suffering from a feeling of weight & pressure in the neck with swelling of the thyroid both eye balls bore prominent & protruding giving the young girl (16½ old) a terrified & subdued appearance. On stooping for anything & looking towards the ground the upper eyelid seemed unable to follow the eye ball, or a want of uniformity between the eyeballs & upper lids.

The Symptoms came on her gradually by languor wariquel palpitation. There was a strong impulse over the normal cardiac region. A thrill could be felt over the enlarged thyroid & a thrill being in the carotid arteries. She complained of shortness of breath and weakness on the least exertion. Her appetite was faulty & her temper irritable. The Monthlies had been seen, but not regular. Her mother blamed "her health" for it all. The Exophthalmos was very marked & the girl was very nervous.

The Etiology of this case appeared to me to be entirely central & not from any lesion in the cervical Sympathetic, and the disease slowly but gradually disappeared more under tonic treatment (iron arsenic & quinine) than by iodine. And as the catamenia became established & her strength improved the glandular enlargement & the Exophthalmos disappeared.

The Exophthalmos is generally supposed to be caused by fat or venous congestion in the orbit.

Another case of Exophthalmic goiter is a young man who first complained of his heart & took about puberty. (16yrs old). There was great protrusion of the eye balls & nervous excitement & anaemia. Otherwise he was a strong healthy young lad, well fed & clothed & cared for by his mother on their own small property. It has always seemed to me that this case too has a pelvic connexion. His self will caused him to neglect Medical treatment to a great extent.

The goiter was not pressing in any way on the Sympathetic. The gland was symmetrical & both eyeballs protruded. For two years he made little or no improvement, but made much complaint regarding his heart & neuralgic pains in his head.

His memory began to fail & his speech was thick & hesitating. His lips, nose & eyelids grew thicker & his whole face looked larger. He cannot suffer the cold in winter without getting clothing & his head tied up in a woolen shawl, the neuralgia then is very severe. His whole skin seems & is thicker & of a yellow jaundice colour. He is now able for some work & goes to church & market, every person remarking at his awkward appearance especially his swollen face, protruding eyeballs & yellow colour & cold aspect His mental faculties are defective as well as his senses of touch, sight & hearing. He takes sometime to comprehend a simple remark & as long to express himself with his thick lips & tongue. The case is interesting & is no doubt a complicated case of goitre &

Myxoedema. The case is practically nothing but the Systemic disturbance at puberty as in the preceding case. He (A.M.) is now 24 years of age I advised him strongly to go South to consult a Professor as he hesitates so very much at any treatment, but South he will not go, & I fear the result of another Cold winter. The enlarged thyroid has now disappeared altogether, when once it was hypertrophied it is now atrophied.

Eight cases of endemic goitre are all in the same locality - all of them living to the North of the Holen hill, a little below the Marsh of using the 'hard' water. One of these cases (M.L.) is worse than the others being a complication of Cystic Sarcocele & Malignant goitre. She is 60 years of age & has been long, about 5 years, using

Edwin internally & internally. The right lobe eighteen months ago grew so hard & was so circumscribed that she went to see her sister in Edinburgh & had part of the lobe removed in the Royal Infirmary there. On returning to her old home however, the disease made rapid advances, till now her neck is 30 inches in circumference, the right side being worst. Both sides are internally hard & vascular The swelling on the right side is pressing on the lower jaw so much that she has to use fluid food, being unable to masticate. The gland is pressing also on the trachea & oesophagus from the right lobe, so that the whole face & neck are distorted. The cysts are multilocular & discharge a colloid or dark grumous matter often mixed with blood. For the past four weeks there is fetor & stony hardness & every symptom of a Malignant character.

In the other cases, all females from 46 to 52 years of age - they live near the marsh, the hard water - exposed to miasma of microorganisms - the age of uterine changes - all these bear the Etiology, as in other localities over all the World, shrouded in mystery. The real cause of ordinary endemic goitre is still unknown. It is my belief that the want of air & sunshine has nothing whatever to do with it, neither do habits nor heredity play any part in the production of goitre. It is tolerably clear that there exists some connexion between goitre & the soil, & that drinking water is the channel by means of which that poison is communicated to the body. Such water is generally if not always derived from calcareous soils & that it is probable that the poison is not a salt of lime or magnesia. It is not proved either that it is a

salt of iron or organic matter. It looks more as if it were one of the alkalies or alkaline earths not lime or magnesia. A strong opinion on the subject however cannot yet be held.

Morbid Anatomy or Pathology.

Bronchocelas are found in various forms— first— they may be due to simple enlargement of the whole thyroid gland, or to one of its lateral lobes and isthmus, but rarely to the isthmus alone. This is the commonest kind & is found to be simple hypertrophy of the normal gland tissue & is known as Parenchymatous Goitre.

The second variety is an enlargement chiefly of the fibrous tissue of the septa the connective tissue that naturally exists between the follicles of the gland. This has a firmer feel & harder to the touch than the first variety & is known as Fibrous Goitre.

A third variety is the Adenomatous Bronchocele; & fourth, Cystic Bronchocele; fifth Fibro-cystic; & lastly Malignant Bronchocele.

In the Cystic kind there is found along with the hypertrophy in the fibrous

tissue, one or more of the natural follicles enlarged forming Single or Multiple cyst. The normal alveolar spaces become distended and are filled with a colloid material, or a dark grumous fluid occasionally mixed with blood. In Single cysts the matter is generally serous, & the size of it may vary from that of a pea to that of a melon. The case I have already described (page 46) is of the Multiple variety, & somewhat resembles a coarse honey comb or Sponge thro' a magnifying glass, with proliferating growths projecting into the interior of the cysts from the walls. The cystic is highly vascular & bleeds easily & copiously. The discharge is now very offensive & the woman complains of pain from above the ear down to the heart. This no doubt a combination of the fibro cystic & Malignant kind of Bronchocele is sometimes associated with an increase or dilation in the vessels. In this case a throb or thrill may be

felt in the enlarged gland, or a forcible or expansile pulsation is given to the swelling. Secondary changes occur occasionally in the tissues of the thyroid besides hypertrophy. The gland may grow as hard as a stone & constitute what is known as Calcified Goitre.

Exophthalmic Goitre stands quite apart from all these other varieties both structurally & clinically. It was first described by Graves of Dublin in 1835 & afterwards by Basedow a German physician in 1840. Here there are many symptoms of systemic disorder the three principle points are the cardiac excitement — the protrusion of the eye-balls & the distended neck. There is great nervousness & anaemia with general leucoderma. In the orbit there is found venous congestion with fatty deposit accounting for the exophthalmos. Miller is said to have found

contractions of non-striated muscular fibres in the fibrous membrane of the orbit over the sphenomaxillary fissure forcing the eyeball forward. The brain & spinal cord have generally been found healthy in Graves' disease.

Myxoedema generally or at least occasionally follows Exophthalmic goitre. It may coexist with the latter as in the case of the young man (page 41) already referred to. The changes in the skin are found to be some nuclear proliferation & development of connective tissue in the neighbourhood of the sweat glands sebaceous glands & hair follicles. There is also found a fair amount of fat deposited subcutaneously. In a number of post mortem examinations there have been found interstitial nephritis & hypertrophy of the heart. but in every case the thyroid was found smaller than normal.

pale yellowish white, tough or indurated fibrous or structureless. It appears that as the disease sets in there is a small celled infiltration of the walls of the vesicles & epithelial infiltration & proliferation between them & within them. As the disease advances, the gland exists of fibrous tissue chiefly with the remains of the vesicles as scattered groups of cells, & lastly there is nothing left but dense fibrous tissue.

These changes in the thyroid seem to be the cause of the whole state of the System in Myxoedema. This view is now confirmed by operative Myxoedema the results of the removal of the thyroid in animals as well as in man. And in cases like my patient (C.M. page 41) there is further evidence in its resemblance to endemic & sporadic cretinism. If it is evident if the loss of the Secretion of the thyroid gland causes Myxoedema, the cure of the complaint will rest on the introduction of the Secretion from a healthy thyroid cautiously into the body of the patient.

The Symptoms of Bronchocele
common to all varieties are an enlargement
of the thyroid, taking more or less the
characteristic shape of the gland & moving
up & down with every act of deglutition
along with the trachea. There is a feeling
of fulness in the part soft & semi-
fluctuating & of uniform consistancy.
In the Cystic kind one or more fluctuating
spaces may be felt, while in the fibrous
kind it is hard & more or less lobed.
In the Malignant variety the growth is
more or less rapid with the neighbouring
glands enlarged & indurated. These
symptoms distinguish it easily from
all other tumours or aneurisms found
in this region. The trachea may
be bent, twisted or distorted from pressure
by the gland & threaten to prove fatal
especially if the patient be young.
Dyspnoea & Dysphagia may also be present
from similar pressure.

Therapeutics.

Bronchocele tho' usually chronic, occurs occasionally in the acute form & may cause severe or even fatal dyspnoea by the rapid growth of the gland pressing on the air passages, the cervical fabia not having sufficient time to yield. This may happen in the case of young patients endemically or sporadically affected & the swelling may find its way behind the sternum or even behind the sternum causing it to be a very difficult matter to get beyond the tumour even after the tracheotomy is performed. In such a case a simple incision thro' the distended facia will relieve the pressure, and if dyspnoea is present after tracheotomy is performed, a long tube may be carefully passed forward till it gets beyond the enlarged gland. The isthmus may be divided carefully, or either of the lobes may be carefully dissected out of the patient removed by a

healthy district away from the noxious locality.

In Chronic cases Iodine is the favourite drug, both for internal application in the form of the tincture or paint or ointment, and internally by inhaling the tincture in hot vapour or by taking it along with Iodide of Potassium. Iron & Arsenic do good, also Fluoric acid in 30 M. doses three times a day for months on end along with every possible hygienic rule strictly attended to. Chromic acid is recommended in Cystic Goitre Dr. Ed. Noakes recommends tapping the cyst & injecting a concentrated Solution of Tannin. After a time he uses a probe dipped in a saturated Solution of Chromic acid which destroys the cyst wall ultimately & facilitates its total removal. Iron & Ergotin have both been tried as injections into the Cyst with doubtful & even injurious results. Fatal results have followed the reckless injection of Iodine

Yet Merrillon of the Salpêtrière Hôpital maintains in the "Bulletin General de thérapeutique" that better results may be expected in Cystic Bronchocele from Iodine injections, than from those of M. Verri or Ergotin. He lays down three points for the proper performance of this operation. 1st The Surgeon must be sure that he has penetrated the substance of the goitre before injecting 2 Avoid as far as possible the puncturing any of the veins which ramify the cellular tissue in front of the neck. In fat patients the veins are not very apparent & it is desirable before inserting the needle to discover a place where no veins shall be in the way. The jugulars can be easily seen & avoided by causing the patient to take a long breath. The third point is to take for use a thoroughly aseptic syringe & warm to heat the needle lying for a time in boiling water, and to examine if a vein has been penetrated by withdrawing the syringe & observing if blood flows

by the cannula. The syringe is then readjusted & ½ a grain of pure tincture of iodine is injected into the substance of the enlarged gland. A cure has been known to follow a single injection, which fifteen injections have been required in some cases. Three or four days must elapse between each injection to avoid iodism. Fatty degeneration & absorption is caused by the iodine in the growth & the irritation leads to the formation of cicatricial tissue the contraction of which causes the goitre to diminish.

Isolated Cystic goitre may be removed by enucleation. If the cysts be scattered throughout the gland, injection is a more suitable operation. For some of the very large cysts Resection is preferable.

Isolated large solid tumours which lie imbedded in comparatively healthy gland tissue are best removed also by enucleation. An incision is made in the middle line down to the cyst wall & the growth removed without much trouble.

In Malignant Bronchocele extirpation must never be attempted. The adhesions & connections & hemorrhage besides the tendency to recur are all against the operation. The supervening pressure in my case is about the larynx & when the dyspnoea becomes serious tracheotomy may be performed with good results as otherwise the woman is in good health comparatively. In removing a diseased gland & take care must be taken to clean nothing behind, else the disease will be sure to recur. To prevent the return of the goitre or the Strumipriva cachexia total removal is required & yet this condition called the cachexia Strumipriva is supposed only to occur when the whole gland is removed. Partial extirpation is not known to cause this cachexia but it is observed almost constantly to follow thyroidectomy It is a peculiar condition of both body & mind akin to Cretinism Myxoedema.

This peculiar Cachexia is known to follow even partial removal of the gland, but only in a few recorded cases by Dr Felix Semon & Professor Kocher. It was stated before the Clinical Society that, out of 550 cases of partial thyroidectomy only 6 presented Symptoms of Cachexia Strumipriva.

In Exophthalmic Bronchocele Graves' or Basedow's Disease, Strophanthus is the favourite drug. It appears to have a marked effect upon the Vagus Centre. The respirations are at first increased but subsequently become slower & weaker then slow & stronger with increased power of expansion.

Dr Fraser says that Strophanthus acts on the Vaso-Motor Centre, prolonging the diastole of the heart & causing the arteries to become contracted.

Dr Hammond affirms that in Strophanthus we have a powerful agent in subjugating

the four principal Symptoms in Exophthalmic Goiter — the exophthalmos — the Goitre — the cardiac Rapidity of the shortened respiration with the chest contraction. The dose is 5 minims three times a day gradually increased if necessary. This drug has succeeded when all tonic medicines have failed, with digitalis; & it is said to be less dangerous than aconite. Good results have followed the use of the tincture of Cactus Grandiflorus (3 to 5 drops) every four hours. Carbonate of Ammonium 1 grain in pill form three or four times a day is said to be useful in subduing this disease. Many cases have benefited by galvanism. the Constant current being applied with the Kathode on the cervical Spine & the anode over the sympathetic in the neck or over the thyroid gland. Ice to the thyroid has afforded considerable relief in some cases. The general System is to be sustained.

When the Cachexia Strumipriva or Myxoedema supervenes the treatment is changed. The patient is to be kept warm. Pilocarpin, Jaborandi & Nitroglycerin seem to have done good service.

The transplantation of thyroid tissue into the patient has been tried into the abdominal cavity with marked benefit. This has in course of time atrophied & the disease returned. On repetition of the transplantation the disease again vanished. The objection to this is the absorption of the tissue transplanted. The insertion of a healthy thyroid from the sheep introduced into the body of the patient so that it can be slowly absorbed by the lymphatics & carried into the circulation as in health, supplies the loss in thyroidectomy or in atrophy of the gland. For this purpose the thyroids of newly killed sheep are prepared carefully & sterilized as a juicy extract. From X – XV minims are injected once a week in the

interscapular region. The injection is given slowly so that five minutes may be occupied in injecting the dose. The effect is said to be remarkable - the oedema soon disappears & the lost natural features are restored - the hands lose their spade like shape & assume their natural size, the Mental & bodily activity are regained & the feeling of chilliness is soon lost. I have some hope of inducing my young man (Alf.) to submit to similar injections when the case will be added to the list either for or against the treatment as it may turn out to be. Dr Clay & Shaw of Bamstead Asylum report some wonderful cures by this juice extract which Dr Michell Clarke mentions one or two cases of well marked Myxoedema with puffy face, drawl in speech, slow mental operations &c. The appearances & symptoms in these cases continued unchanged by the injections.

The Holm hill resembles more the deck of a ship in mid ocean for pure air & sun light. It is not more than two miles from the sea on both its northern & southern aspects. The people have a fair amount of country nourishing food. The only cause is the marsh & hard water already referred to as existing on the northern slope & above the chain of small farm houses where goitre is found. This is a very different situation from the Alpine & Rhone Valley districts & that the Goitre in Wales refutes several theories as to its etiology already noted. The climate also is much milder also than in more southern districts, perhaps not so hot in summer but more temperate in winter. The snow seldom lies on the ground longer than three days. So the theory of snow & cold water as a cause of this complaint does not hold good here. The cases at present under my care, illustrating

as they do. So many different varieties of Bronchoceles has tempted me to collect the facts & write this thesis on the subject which, I trust, will not be without some benefit to myself as well as to my patients.